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10/648,973	08/27/2003	Larry L. Johnson	2232/SPRI.103532	4144

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EXAMINER	
AMRANY, ADI	

ART UNIT	PAPER NUMBER
2836	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/648,973	JOHNSON, LARRY L.	
	Examiner	Art Unit	
	ADI AMRANY	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed July 30, 2008 have been fully considered but they are not persuasive. Applicant's arguments regarding the "dual functionality" of the super capacitor are directed at the inherent properties of all capacitors. Capacitors are designed to filter high/low frequencies when placed in either in parallel/series with an incoming AC signal (with DC being the lowest frequency possible). Further, the physical construction of capacitors (two conductors separated by a dielectric material) means that the component charges to a voltage equal to the voltage applied across its terminals. The capacitor then discharges to zero volts when that voltage is removed. Since the capacitor releases a charge after a source has been removed, it becomes a "power source." These properties (filter and backup power source) are well established in the field of electrical engineering and are among the first theories covered in introductory EE courses. Furthermore, applicant acknowledges the power supply property of capacitors in the specification (par 34; "discharge time"). Clearly, applicant's capacitors are not the first to include this discharge property.

It is noted that claim 6 does not contain any limitations directed towards the filtering properties of the super capacitor. Further, capacitors are passive devices. As such, capacitors are not "activated" or "configured." Capacitors are placed into a circuit in specific locations to take advantage of their inherent properties.

Regarding Jungreis '593, applicant has erroneously directed the arguments (Remarks, page 7, second full paragraph) to capacitor C1 of figure 4. This component

was never referenced in the Final Rejection (April 4, 2008). The Jungreis capacitor is part of the filter (F1 to Fn+2). Applicant's arguments, therefore, are not persuasive.

Contrary to applicant's assertion (Remarks, page 9, second paragraph), coupling a capacitor to the output of a rectifier is not an "esoteric technology." This practice is well known in the art of electrical engineering, as was demonstrated in the Final Rejection. Passing an AC sine wave through a rectifier (diode, for example), results in a series of "humps." The voltages of the humps are the absolute values of the original sine wave (the negative portions of the wave are made positive). Coupling a capacitor to the rectifier takes advantage of the "discharge time" of the capacitor to smooth out the humps and create a more stable DC voltage (with minor voltage drops between the rectified humps). Additional capacitors decrease the humps even more to produce a nearly uniform DC signal. This theory is well recognized, even by first semester electrical engineering students. This design is also clearly demonstrated by Shimamori (specifically, col. 1, line 34-38).

Applicant has also mischaracterized the interpretations in the Final Rejection as "Official Notice." Applicant has raised six points of contention (Remarks, page 9, third paragraph, items a-f) without acknowledging the case law cited in the rejection and completely ignoring the secondary references.

(a) Regarding a rectifier and super capacitor "housed together;" applicant has not responded to or rebutted the cited case law (pages 3-4). It would be obvious to: combine two pieces of an article to form one piece; make an old device portable; and change the size of the rectifier to include the super capacitor. See also MPEP §2144.

Second, applicant has not challenged or rebutted the Shimamori patent. The Shimamori reference discloses rectifiers and capacitors "housed together" (fig 10, items 15, 17).

(b) The definition of a rectifier is the conversion of AC power to DC power. Official Notice is not required for the definition of such a commonly used and unambiguous EE term. Applicant is also requested to review Shimamori (specifically, col. 1, lines 34-36).

(c) Connecting two components (rectifier & capacitor) together in series inherently results in three connection points. Two separate components comprise four "connection points." There are two components, and each component has two leads (input/output) (2 * 2 = 4). By placing the components together, the components will "share" two leads, which combine (electrically and physically) to form one lead (2 – 1 = 1). Since two leads have combined, it may appear that one connection point has been removed (4 – 1 = 3). Thus, having three connection points is the inherent result of joining any two components in series. Similarly, combining two components in parallel would result in two connection points.

This configuration is also demonstrated in Jungreis ('593) and Shimamori. Jungreis figure 4 clearly shows that a rectifier (DR1) and capacitor (F1) are coupled between an AC supply (10) and the output to the load (14). The "first connection point" is the input to the rectifier (D1) where the horizontal input lines intersect with the vertical lines leading to the diodes. The "second connection point" is the voltage bus that connects the cathodes of the upper three diodes with the upper node of capacitor (F1).

The "third connection point" is the ground node that connects the bottom node of capacitor (F1) with the anodes of the bottom three diodes. Regarding Shimamori, applicant is requested to review figure 2 (items 39 and 41).

(d)-(e) Jungreis '593 discloses the second connection point is coupled to the output of the rectifier, a first node of the capacitor and the load, and the third connection point is coupled to the second node of the capacitor and ground, as discussed above.

(f) Applicant's own specification refers to the "discharge time" of capacitors, a property that is well known in the art and is an inherent result of the internal configuration of a capacitor, as discussed above. "Discharge time" is a property so well known; it is even used by applicant (specification, paragraph 34). Official Notice is not required to establish the existence of a fact already known to the applicant.

The Final Rejection did not contain any assertions of Official Notice. As discussed above, all six of applicant's contentions are disclosed by the references, are known to the applicant, or would be obvious in view of the references based on established case law and MPEP rules regarding combining parts (into a housing), making a device portable (by putting them into a housing), and changing the size of a device (by changing the dimensions of a housing to include other components).

Contrary to applicant's arguments (Remarks, page 10, second paragraph), having a capacitor supply intermittent power during an interruption is not an unexpected result. It is a well known and established fact, and is recognized as such by applicant, as discussed above. Further, having a capacitor supply power during the switch between two power sources does not eliminate the need for a separate backup power

source. A UPS may include any number of backup/secondary power supplies. As a switch selects between the different power supplies, a capacitor supplies "bridging power" for the fraction of time that it takes the switch to fully engage a new power source. It is noted that applicant's claim 6 also contains a separate backup DC power source (proton exchange membrane). It is unclear how the existence of a capacitor renders the PEM unnecessary.

Applicant's "newly claimed functionality of the super capacitor" is drawn to inherent and well established properties of capacitors. Therefore, the rejection of claims 1-6 in view of the references cited in the Final Rejection is maintained.

Claim Objections

2. Claim 11 is objected to because it recites that the AC power source is a commercial electric utility. The utility, however, is specifically recited in claim 6 as a separate power source that is selected by the first switching mechanism. Claim 6 recites that the AC power source is at least one microturbine generator. For the purpose of the art rejection of the claim 11, the phrase above will be interpreted as reciting one of the available AC sources is the commercial electric utility. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jungreis (US 6,184,593) in view of Jungreis (US 6,541,940), Shimamori (US 5,737,202) and McCluskey (US 6,902,837).

With respect to claim 6, Jungreis '593 discloses a power supply system comprising:

an AC power source (figs 3 and 4, item 10; col. 3, lines 4-5); and

a plurality of individual rectifier/capacitor devices (items DR1-DRn+2, F1-Fn+2; col. 3, lines 4-5, 33-40), each device including a rectifier and a capacitor together (col. 1, line 65 to col. 2, line 5, "in combination");

a DC power source (16) selectively powering said loads based on an interruption of AC power being provided by the AC power source (col. 1, lines 32-37);

wherein each of said individual rectifier/super capacitor devices includes a first, a second, and a third connection point (fig 4), the first connection point internally couples the rectifier to the AC power source (fig 4), the second connection point internally couples the rectifier to a first side of said capacitor and to the load (fig 4), and the third connection point internally couples a second side of said capacitor to ground (fig 4);

wherein said AC power source is at least one microturbine generator (item 20b; col. 2, lines 58-59) operable to produce AC electrical power and adapted to be powered by a fuel; and

wherein the capacitor is further configured as a power source to provide DC power to the telecommunication equipment such that the EC power provided to the load is uninterrupted (inherent).

Jungreis '593 discloses that it is common in the prior art to include switching mechanisms to alternatively connect the power sources and the load (fig 2, item S2; col. 1, lines 25-37). Jungreis also discloses that the switching mechanism is a transfer switch that responds automatically to sensed current flow.

Jungreis '593 discloses that the rectifiers (Dr) and capacitors (f) are "in combination" (col. 1, line 65 t col. 2, line 5; claim 1). One skilled in the art would recognize that rectifiers and capacitors are commonly paired in order to provide a smoother DC output voltage. A rectifier without a filter would output a sine wave (only the positive values) that is clearly unsuitable for a DC circuit. Coupling a capacitor to the rectifier smoothes out the "humps" to create a more stable DC voltage. The ripples of this DC voltage are a function of the capacitance of the filter used with the rectifier. Since these two components are commonly (if not always) placed together, it would be obvious to one skilled in the art to "house" them together since it has been held that forming in one piece an article which has formerly been formed in two piece and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.W. 164 (1893).

Further, the housing does not improve the performance of the rectifier/capacitor device (specification, par 24). It appears that the housing only allows a user to remove the paired components as one unit. Rectifiers and capacitors are commonly paired, and

it would be obvious to one skilled in the art to consider the two components as a single device, since it has been held that making an old device portable or movable without producing any new or unexpected results involves only routine skill in the art. *In re Lindberg*, 93 USPA 23 (CCPA 1952).

Also, it would have been obvious to alter the dimensions of the rectifier housing to include the paired capacitor, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Lastly, a "super capacitor" is a capacitor, as disclosed by Jungreis '593. It would be obvious to one skilled in the art that eventually, increasing the size of a capacitor becomes prohibitive and a designer would select a super capacitor, which holds the same charge as a similarly rated capacitor, but takes up much less physical space. It has been held that discovering an optimum value of a result effective variable (capacitance) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Jungreis '940 discloses a power supply system for providing reliable electrical power to a telecommunications facility (col. 1, lines 45-59), said facility containing telecommunications equipment. At the time of the invention by applicant, it would have been obvious to utilize the power supply system disclosed in '593 with the telecommunications facility disclosed in '940 in order to supply uninterruptible power to an electricity dependent utility service provider. Further, it would have been obvious to

utilize super capacitors in the Jungreis systems, as it is well known in the art that super capacitors are capacitors that are designed to comprise a higher energy density.

Shimamori discloses a power supply system (fig 10; col. 2, lines 12-37) comprising an AC power source (item 4) and a plurality of individual rectifier/capacitor devices (items 15, 17; col. 1, line 34-38) housed together, where each rectifier/capacitor device includes three connection points (fig 2, items 39, 41). Shimamori discloses that in order to reduce the overall size of the AC/DC converter, the DC/DC converter is removed and placed on an integrated circuit, which leaves the rectifier and capacitor together in the remaining unit ("housing").

Jungreis and Shimamori are analogous because they are from the same field of endeavor, namely power distribution systems. At the time of the invention by the applicant, it would have been obvious to one skilled in the art to combine the power supply system disclosed in Jungreis with the housing disclosed in Shimamori in order to reduce the size and complexity of the AC/DC converter circuit.

McCluskey discloses sensing/control means (fig 1, item 44; col. 4, lines 31-58) operable to determine when inadequate flow of the fuel is realized by said at least one microturbine generator, and in response, direct the operation of the first switching mechanism to selectively couple said commercial electricity to said first connection point (col. 6, lines 28-32). McCluskey further discloses at least one proton exchange membrane fuel cell modules (fig 1, item 100; col. 2, lines 8-36; col. 4, lines 18-30) receiving hydrogen fuel from storage tanks (64), said DC power source selectively powering said telecommunication equipment (36).

Jungreis, Shimamori and McCluskey are analogous because they are from the same field of endeavor, namely power distribution systems. At the time of the invention by applicant, it would have been obvious to one skilled in the art to apply the sensing/control mechanism and proton exchange membrane of McCluskey to the power supply system disclosed in Jungreis and Shimamori in order to connect the load to the appropriate power source (McCluskey col. 6, lines 28-32).

With respect to claim 11, Jungreis '593 further discloses said AC power source is a commercial electric utility (col. 1, lines 11-12).

5. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jungreis ('593 and '940), in view of Shimamori, McCluskey and Welches (US 6,404,655).

With respect to claim 7, Jungreis does not expressly disclose said fuel for said at least one microturbine generator is natural gas. Welches discloses a microturbine generator powered by a gas turbine (col. 10, lines 4-7).

Jungreis, Shimamori, McCluskey and Welches are analogous because they are from the same field of endeavor, namely AC power rectifiers. At the time of the invention by applicant, it would have been obvious to a person of ordinary skill in the art to combine the microturbine generator disclosed in Jungreis with the power distribution system disclosed in Jungreis, Shimamori and McCluskey with the gas disclosed in Welches. Further, it would be obvious to one skilled in the art that the gas turbine would be powered by natural gas. The motivation for doing so would have been because natural gas is a widely used combustible fuel.

With respect to claim 8, it would be obvious to one skilled in the art that said natural gas is supplied by a commercial utility. Natural gas is commonly distributed by commercial utilities to customers through underground pipes.

With respect to claim 9, Welches discloses the fuel for said at least one microturbine is propane. It would have been obvious to one skilled in the art to that the gas disclosed in Welches may comprise propane because propane is a widely used combustible fuel.

With respect to claim 10, it would be obvious to one skilled in the art that said propane is stored on site. Propane gas is commonly delivered to consumers and stored in tanks.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is requested to review the cited references in their entirety.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADI AMRANY whose telephone number is (571)272-0415. The examiner can normally be reached on Mon-Thurs, from 10am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/

Supervisory Patent Examiner, Art Unit 2836